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ECHINODERMS COLLECTED ALONG THE EASTERN SHORE OF THE RED SEA (SAUDI ARABIA)

Riassunto. — *Echinodermi raccolti lungo le coste orientali del Mar Rosso (Arabia Saudita).*

Durante recenti ricerche presso Jeddah, l'A. raccolse una serie di Echinodermi (53 specie) che sono qui elencati, con note su alcuni di essi. Il Crinoide *Dorometra parvicirra* è per la prima volta citato per il Mar Rosso.

Abstract. — During recent field work near Jeddah, the A. collected a series of Echinoderms (53 species) which are listed here with remarks on some of them. The Crinoid *Dorometra parvicirra* is firstly reported from the Red Sea.

During April 1977 and again in January 1978 the writer joined a mission of the « Underwater Scientific and Technical Research Group, Florence » in cooperation with the Oceanographic Department of the King Abdullaziz University (Jeddah, Saudi Arabia). The investigated area is Sharm Obhor, a rather long and narrow creek about 40 km north of the town, not deeper than about 40 m. Fringing reefs are well developed, with rich populations of fishes and invertebrates. Sandy bottoms and small beds of phanerogams also occur. Rather wide lagoons with algae and scattered clumps of corals (*Stylophora*) stretch immediately out of the sharm, south and north of Ras Obhor. 53 species of Echinoderms were collected. One of them (*Holothuria tortonesei*) has been described as new by CHERBONNIER (1979). The material is now preserved partly in the said department of K.A.U., partly in the Zoological Museum of Florence and in the collection of the writer. Very few Echinoderms are mentioned by HUGHES (1977) in his paper on the marine fauna near

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Jeddah. One of them, the Echinoid *Echinostrephus molaris* (BLV.), was not found by us. On the other hand, several other species well known from the Red Sea are expected to be present also where our field work was carried on.

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CRINOIDEA - Three species. *Heterometra savignyi* (J. MUELL.) and *Lamprometra klunzingeri* (HARTL.) were found very common, sharing the chief ecological character. Both usually appear by night on the reef, but sometimes can be observed during the day, resting with curled arms in small branched corals growing on the walls of piers, less than 1 m deep. To *Dorometra parvicirra* (P. H. CARP.) is referred a single specimen. Ten arms, probably 70-75 mm long (all are broken); calyx diameter 6 mm. Centro-dorsal with a well distinct central pole (1,5 mm) occupied by a group of papillae; these are surrounded by the cirrus sockets arranged in few, very irregular rows. Cirri about XXX 12-16, longest about 10-12 mm long. Segments well flared distally, centrally constricted somewhat compressed; fourth and sixth segments longest, 2-3 times as long as the median height, not more than about twice as long as the distal edge. Opposing spine almost as long as the terminal and directed slightly obliquely. Division series well separated laterally. I Br₁ with a rounded tubercular extension on each side. Brachials smooth. Pinnulae slender. Length of P₂ intermediate between P₁ and P₃. Colour (in alcohol) yellowish. Two dark purple spots on each plate of the division series and on the brachials near the base of the arms. Similar spots, variable, are grouped along the arms, forming well spaced dark rings extended on 3-4 segments.

This is an interesting (unfortunately incomplete) representative of *Dorometra*, an Indo-West Pacific genus of Antedonidae. These Crinoids are of small size and the specimen at hand is a large one. The only species hitherto reported from the Red Sea is *D. aegyptica* (A. H. CLARK), having longer cirri (about a third of the arm length). According to A. M. Clark (1967: 65) « There appears to be little else besides the proportion of the cirrus to arm length to distinguish between *parvicirra* and *aegyptica* ». The latter is known only from the type, collected in the Bay of Suez and apparently lost; its arms were 40 mm long and the cirri 10-13 mm. The study of my specimen seems to support the identity of *D. parvicirra* and *D. aegyptica*. The former of these has been collected in East Indies and

in the western Pacific between north Australia and Japan. The finding in the Red Sea of a species held to live in much more eastern regions is more frequent than previously believed. *D. mauritiana* (A. H. CLARK) of the western Indian Ocean (Mauritius, Madagascar, Maldives), the habitat of which might extend to the Red Sea, differs because the cirri have a lower number of segments (usually 10-12) and P_2 is slightly shorter than P_1 .

HOLOTHURIOIDEA - 16 species. *Holothuria atra* JAEG. appeared very abundant in the lagoons at 60-80 cm depth or even less. A young *H. pardalis* Sel. was going to divide: the two parts of the body were still joined but well distinct (anterior 14 mm, posterior 21 mm). This kind of multiplication, well known in other species of this genus, is probably frequent also in this one. A series of *Synaptula* was collected. Those identified as *S. reciproquans* (FORSSK.) were uniformly purple grey; those identified as *S. recta* (SEMP.) were blackish with many yellow spots and short lines.

Other species: *Actinopyga mauritiana* (QUOY-GAIM.), *A. serratidens* PEARS., *Bohadschia graeffei* (SEMP.), *Holothuria tortonesei* CHERB., *H. scabra* JAEG., *H. nobilis* SEL., *H. difficilis* SEMP. (?), *H. arenicola* SEMP., *H. impatiens* (FORSSK.), *Stichopus variegatus* SEMP., *Synapta maculata* (CHAM. EYS.), *Opheodesoma griseum* (SEMP.).

ASTEROIDEA - 11 species. Several *Culcita coriacea* M. TR. were collected on sandy bottom (1-1,50 m depth) in the innermost part of the sharm and near the reef south of Ras Obhor. When living, their diameter was about 20-24 cm and the height 6-8 cm; the outline was almost circular and in one case oval. The weight was remarkable, reaching at least 1,5 kg. Aboral side brown of different shades and usually with many black blotches, irregular and variably extended: they are more scattered near the borders, where the yellow spots become predominant. The tube feet are reddish. I did not find another Oreasterid common the Red Sea: *Pentaceraster mammillatus* (AUD.). The photo of a specimen from Jeddah has been published by A. M. CLARK & ROWE: 1971, pl. 6 f. 2. *Gomophia aegyptiaca* GRAY was frequently found on corals and also on rocks at 0,50-3 m depth. R about 60-80, r 9-10 mm, R/r 6-8; a specimen was perfectly tetramerous. Colour variable: pink, red, buff, maroon. Dark purple rings around the base of tubercles. Sometimes many aboral plates are white and also surrounded by dark rings. The separation of *Gomophia* from *Nardoa* may be questioned, but appears valid if the respective type-species (*G. aegyptiaca* and *N. variolata*) are compared. In *Gomophia* the aboral skeleton is clearly reticulated, intermarginal plates are present

proximally, adambulacral spines are well separated from the adjacent granulation, oral papulae are lacking. The specific name of this Ophiasterid is commonly spelt *egyptiaca*, but *aegyptiaca* is evidently the correct spelling. According to the Code (art. 32-33) this is a justified emendation, because it does not correct an improper latinization but simply gives the proper spelling of a Latin adjective (*aegyptiacus*, from *Aegyptus*).

Leiaster leachi GRAY was hitherto reported from a single locality in the Red Sea (Gulf of Aqaba). We had three specimens from the reef of Sharm Obhor. R 110-130, r 12 mm; arms slightly unequal. About 40-60 carinal plates. Rather large madreporite, pedicellariae abundant, 2-3 inner adambulacral spines 3-4 times as long as wide and not furrowed. Colour red with purplish blotches or orange with reddish brown blotches, large and partly confluent. Tube feet greenish. The subsp. *hawaiiensis* FISH. is probably not separable. Two different phenotypes of *Fromia* are present in the Sharm; a) smaller (max. R 30, r 7 mm in the collected specimens), with shorter arms (R/r slightly less than 4); bright red colour forming a reticulum around white plates. b) Larger (max. R 43, r 10 mm), with longer arms (R/r slightly more than 4), more pointed; deep red, with some blue (and prominent) carinal and marginal plates. Some other differences can be detected in the number and prominence of plates and in the number of oral papulae. Specimens of type b are referred to *F. ghardaqana* MRTNS, that till now is the only *Fromia* surely reported from the Red Sea, where it is endemic. No data on colour are included in the descriptions of this species. My material is inadequate for deciding at present if the specimens of type a represent a variant of the latter or are specifically different. Both types were found common on corals at 1-2 m depth.

I had a single adult *Asteropsis carinifera* (LAM.). R 57, r 16 mm. Spines are developed on the aboral and margino-dorsal plates. Colour greenish gray with brown green blotches. After the different descriptions in the literature, the colour of this asteroid is very variable. I found also (April 1977) on a branched coral a little seastar, identifiable as a young *A. carinifera*. R 7, r 4,5 mm; diameter 13 mm. Body very flat. Arms wide, triangular pointed, not carinate. Aboral plates polygonal, uniformly granulated; the granules are not very close and the limits between the plates are evident. Eleven carinal plates, distally smaller. Anus surrounded by a few small tubercles. Madreporite small, a bit nearer to the center of the body than to marginal plates. Papulae isolated, absent on the central interradiab aboral areas. Six margino-dorsal plates on each side, covered by granules similar to those of the near plates; some small

tubercles are on the outer border: a rather larger and rounded one is on the distal extremity of the border. Oral side covered with granules similar to the aboral ones. Pedicellariae absent. Six margino-ventrals on each side, bearing on their outer border some tubercles, larger than those on margino-dorsals and less unequal. Three furrow spines of same size and with rounded tip; a subambulacral spine, shorter but larger than the preceeding. Aboral side greenish grey, oral side white. This specimen is interesting as it is one of the smallest young stages described for *A. carinifera*. Those from Mauritius figured by DE LORIO (1885, pl. XX, f. 7-10) are similar, but R is not less than 13 mm. One from Tuamotu archipelago, quoted by MARSH (1974), had R 5, r 3,5 mm.

Other species: *Luidia savignyi* (AUD.), *Astropecten polyacanthus* MUELL. TR., *Linckia multifora* (LAM.), *Asterina burtoni* GRAY, *Acanthaster planci* (L.), *Mithrodia clavigera* (LAM.).

OPHIUROIDEA - 9 species. *Astroboa nuda* (LYM.) is common and may be seen at night crawling on the corals. Large specimens (Disc diameter 60-70 mm) have yellow arms with a grey line all along the middle of the aboral side; disc yellow with black spots and blotches chiefly on the aboral side, that may be nearly all dark. Smaller specimens are usually brown-black, only paler on the ventral side of the arms. In this species, yellow and black colours are not strictly correlated with size, occurring together in various proportions according to the populations; black specimens form 60-70% of the animals living near Eilat (TSURNAMAL & MARDER, 1966). In Sharm Obhor I collected a very small ophiuroid attached to a Gorgonian (*Acabaria*). Quite probably it is a young *Astroboa* (as far as I know, no other members of the order Euryalae are known from the Red Sea). Disc diameter 3 mm, arms with two forks each, colour whitish (in alcohol). *A. nuda* is widespread from Japan to the Red Sea, but in the latter was hitherto reported only from the Gulf of Aqaba (Eilat).

In sponges and corals I gathered many *Ophiothrix savignyi* MUELL. TR. They show the usual variations in the disc covering (long spines present or absent) and the colour (red, yellow, bluish). In one of them the spinules on the dorsal arm plates are particularly developed, in size and number; the colour is black, except on the circumoral region and along the middle ventral side of arms, that are white.

Other species: *Ophiactis savignyi* MUELL. TR., *Macrophiothrix demessa* (LYM.), *Ophiocoma pica* MUELL. TR., *O. scolopendrina* (LAM.), *O. erinaceus* MUELL. TR., *Ophiolepis cincta* MUELL. TR., *O. superba* H. L. CLARK.

ECHINOIDEA - 14 species. *Eucidaris metularia* (LAM.), *Prionocidaris baculosa* (LAM.), *Phyllacanthus imperialis* (LAM.), *Diadema setosum* (LESKE), *Echinothrix calamaris* (PALL.), *Asthenosoma varium* GRUBE, *Nudechinus scotiopremnus* H. L. CLARK, *Tripneustes gratilla* (L.), *Parasalenia poehli* PFEFF., *Echinometra mathaei* (BLAINV.), *Heterocentrolus mammillatus* (L.), *Clypeaster humilis* (LESKE), *Fibularia ovulum* LAM., *Paraster gibberulus* (L. AG.).

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